

WHAT IS CLAIMED IS:

1. An electromagnetic wave detecting device,  
comprising:

a semiconductor film which generates a charge upon  
induction by an electromagnetic wave; and

an active matrix array for reading out the charge  
which is generated in the semiconductor film,

wherein:

the active matrix array is formed by having a resin  
substrate as its base and detects the electromagnetic  
wave by a direct converting system.

2. The electromagnetic wave detecting device set forth  
in Claim 1, wherein:

the semiconductor film has Se as its major  
component.

3. The electromagnetic wave detecting device set forth  
in Claim 1, wherein:

the semiconductor film is formed as a continuous  
film to cover a surface of the active matrix array.

4. The electromagnetic wave detecting device set forth  
in Claim 1, wherein:

the semiconductor film and the active matrix array

are respectively formed on different substrates, thereafter being joined together.

5. The electromagnetic wave detecting device set forth in Claim 1, wherein:

the semiconductor film includes a photoconductive organic material as its major component.

6. The electromagnetic wave detecting device set forth in Claim 1, wherein:

the resin substrate has a curved shape.

7. The electromagnetic wave detecting device set forth in Claim 6, further comprising:

a supporting material having a curved shape formed on one side of the resin substrate which is opposite to a side having the semiconductor film formed thereon.

8. The electromagnetic wave detecting device set forth in Claim 1, wherein:

at least one side of the resin substrate is coated with a gas barrier layer.

9. The electromagnetic wave detecting device set forth in Claim 1, wherein:

one side of the resin substrate having the semiconductor film formed thereon is covered with a resin layer.

10. The electromagnetic wave detecting device set forth in Claim 1, wherein:

a thermal expansion coefficient  $x(^{\circ}\text{C})$  of the resin substrate is within a range of  $1.0 \times 10^{-5} < x < 1.0 \times 10^{-4}$ .

11. The electromagnetic wave detecting device set forth in Claim 1, wherein:

a thermal expansion coefficient  $y(^{\circ}\text{C})$  of the semiconductor film is within a range of  $30 \times 10^{-6} < y < 50 \times 10^{-6}$ .

12. The electromagnetic wave detecting device set forth in Claim 1, wherein:

a thickness  $z(\text{mm})$  of the resin substrate is within a range of  $0.1 < z < 0.7$ .

13. The electromagnetic wave detecting device set forth in Claim 1, wherein:

the resin substrate is flexible.

14. The electromagnetic wave detecting device set forth

in Claim 1, wherein:

the active matrix array includes a TFT element, charge storage capacitance, a charge collector electrode, a scanning electrode, and a data electrode.

15. The electromagnetic wave detecting device set forth in Claim 1, wherein:

the resin substrate has an organic-inorganic hybrid material as its major component.

16. The electromagnetic wave detecting device set forth in Claim 1, wherein:

the resin substrate includes as its major component a material which is a combination of a plurality of organic compounds.

17. The electromagnetic wave detecting device set forth in Claim 1, wherein:

CdTe is used as a material of the semiconductor film.

18. The electromagnetic wave detecting device set forth in Claim 1, further comprising:

a supporting substrate which includes a bias electrode and the semiconductor film.

19. The electromagnetic wave detecting device set forth in Claim 18, which has a structure in which an active matrix substrate and the supporting substrate are connected via conductive connection materials.

20. A manufacturing method of an electromagnetic wave detecting device, comprising the steps of:

    forming an active matrix array on one side of a resin substrate;

    setting the resin substrate having the active matrix array formed thereon to a supporting material while deforming the resin substrate to a curved shape; and

    depositing a semiconductor film on a surface of the active matrix array deformed to the curved shape.

2018 RELEASE UNDER E.O. 14176